March 22, 2002

Mr. Ronald A. Milner, Chief Operating Officer
Office of Civilian Radioactive Waste Management
U. S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION'S OBSERVATION AUDIT REPORT NO. OAR-02-04, "OBSERVATION AUDIT OF THE BECHTEL SAIC COMPANY, LLC, AUDIT NO. BSC-SA-02-009 OF SENIOR FLEXIONICS, INCORPORATED"

Dear Mr. Milner:

I am transmitting the U.S. Nuclear Regulatory Commission's (NRC's) Observation Audit Report (No. OAR-02-04). It is on the U.S. Department of Energy's (DOE's) Management and Operating Contractor's (M&O's) Quality Assurance (QA) audit of Senior Flexionics, Incorporated, Pathway Division (SFIPD). Specifically, it was DOE's Office of Civilian Radioactive Waste Management's M&O's contractor Bechtel SAIC Company, LLC (BSC), that performed the audit of SFIPD. This audit was conducted on February 20-21, 2002, at SFIPD facilities in New Braunfels, Texas.

The purpose of this audit was to evaluate those elements of SFIPD's QA Program where BSC had recommended changes because of problems identified during a previous BSC survey, BSC-SFE-01-008.

The scope of the audit was to evaluate if SFIPD had effectively implemented BSC's recommended changes in six elements of its QA Program - - (1) Control of Purchased Items and Services; (2) Control of Special Processes; (3) Test Control; (4) Control of Measuring and Test Equipment; (5) Corrective Action; and (6) QA Records, and to review the work performed on the welded rings.

The NRC observers (hereafter observers) determined that this audit was effective in identifying potential deficiencies and recommending improvements for SFIPD activities reviewed. During the conduct of the audit, both the BSC audit team (hereafter audit team) and the observers reviewed applicable documents, procedures, and activities within the audit's scope, and observed one completed set (two welded rings) of setup specimens that had been fabricated for test setup and trial welding.

The audit team identified one deficiency in the area of nonconformance control. The staff believes that this BSC audit was well-planned, thorough, and adequately evaluated the actions that SFIPD took to improve its QA activities.

The observers agreed with the audit team's conclusions, findings, and recommendations presented at the audit exit. The staff will continue to interface with OCRWM and follow the progress that SFIPD is making to address the issues identified during this audit.

A written response to this letter and the enclosed report is not required. If you have any questions, please contact Kamal Naidu of my staff at (301) 415-5020.

Sincerely,

/RA/

Janet Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: NRC Observation Audit Report
No. OAR-02-04, "Observation Audit
of the Bechtel SAIC Company, LLC,
Audit No. BSC-SA-02-009 of Senior Flexionics, Incorporated."

cc: See attached list.

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cc: See attached list.

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Letter to R. Milner from J. Schlueter dated March 22, 2002

cc:

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J. Meder, Nevada Legislative Counsel Bureau
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W. Barnard, NWTRB
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A. Collins, NIEC
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J. Larson, White Pine County
R. Clark, EPA
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R. Anderson, NEI
R. McCullum, NEI
S. Kraft, NEI
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I. Zabarte, W.S.N.C.

C. Anderson, Las Vegas Paiute Tribe

J. Birchim, Yomba Shoshone Tribe

L. Jackson, Timbisha Shoshone Tribe

C. Meyers, Moapa Paiute Indian Tribe

V. Miller, Fort Independence Indian Tribe

A. Bacock, Big Pine Paiute Tribe of the Owens Valley

R. Quintero, Inter-Tribal Council of Nevada (Chairman, Walker River Paiute Tribe)

M. Bengochia, Bishop Paiute Indian Tribe

J. Egan, Egan & Associates, PLLC

R. Bahe, Benton Paiute Indian Tribe

C. Bradley, Kaibab Band of Southern Paiutes

R. Joseph, Lone Pine Paiute-Shoshone Tribe

L. Tom, Paiute Indian Tribes of Utah

E. Smith, Chemehuevi Indian Tribe

J. Charles, Ely Shoshone Tribe

D. Crawford, Inter-Tribal Council of Nevada

H. Blackeye, Jr., Duckwater Shoshone Tribe

D. Eddy, Jr. Colorado River Indian Tribes

J. Leeds, Las Vegas Indian Center

W. Briggs, Ross, Dixon & Bell

U.S. NUCLEAR REGULATORY COMMISSION

OBSERVATION AUDIT REPORT NO. OAR-02-04

"OBSERVATION AUDIT OF THE

BECHTEL SAIC COMPANY, LLC

AUDIT NO. BSC-SA-02-009 OF SENIOR FLEXIONICS, INCORPORATED"

/RA/ 03/12/02
Kamalakar R. Naidu
Projects and Engineering Section
High-Level Waste Branch
Division of Waste Management

/RA/ 03/14/02
Bruce Mabrito
Center for Nuclear Waste Regulatory Analyses

Reviewed and Approved by:

/RA/ 03/14/02
N. King Stablein, Chief
Projects and Engineering Section
High-Level Waste Branch
Division of Waste Management

1.0 INTRODUCTION

1.1 Senior Flexionics, Incorporated (Background)

The current "Statement of Work Agreement" between the U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM), Management and Operating Contractor (M&O), and Senior Flexionics, Incorporated, Pathway Division (SFIPD), is Technical Services Statement of Work, Revision 1, dated October 22, 2002. The scope of work, under the current statement of work, is for SFIPD to provide all materials, labor, fabrication, and nondestructive examination (NDE) resources necessary to fabricate, test, and record data related to welding samples simulating the waste package closure weld. SFIPD will fabricate 18 rings similar to the ones that will be used to seal-weld the spent fuel containers. SFIPD will fabricate two trial-specimen welded rings, during which all manufacturing process methods will be finalized. SFIPD will perform NDE on each specimen, including weld-flaw information for each specimen; take measurements of surface residual stresses; and perform metallography. Production of the weld-flaw maps will require extensive metallography and is included in the scope of the work. PCI, Illinois, a subcontractor to SFIPD, will bring its automatic welding machine from Illinois to New Braunfels, Texas, and install it at SFIPD, to weld the final 16 rings, under the SFIPD Quality Assurance Program (QAP). SFIPD will either perform all the NDEs, or subcontract some of them to an approved vendor.

1.2 Performance of the Audit

Staffs from the U.S. Nuclear Regulatory Commission (NRC), Division of Waste Management, and the Center for Nuclear Waste Regulatory Analyses (CNWRA) observed the M&O, Bechtel SAIC Company (BSC), audit BSC-SA-02-009 of activities regarding the implementation of the SFIPD Quality Assurance Manual (QAM). This audit was conducted on February 20-21, 2002, at SFIPD facilities in New Braunfels, Texas. The purpose of this audit was to evaluate the effectiveness of the implementation of SFIPD's QAM, and to determine if applicable requirements of the OCRWM QAP Requirements and Description (QARD), Revision 10, were being met. The scope of the audit included evaluating the implementation of the recommendations made in Supplier Survey BSC-SFE-01-008.

The NRC observers' (hereafter observers') objective was to assess whether BSC Quality Assurance (QA), Product Quality Engineering/Supplier Audits and Evaluation Section's, audit team (hereafter audit team) and SFIPD were properly implementing the QA requirements contained in Subpart G, "Quality Assurance," to Part 63, of Title 10 of the U.S. Code of Federal Regulations (10 CFR Part 63) and the provisions contained in the QARD. This report presents the observers' determination of the effectiveness of the BSC audit and whether SFIPD implemented adequate QARD and QAM controls in the audited areas.

2.0 MANAGEMENT SUMMARY

Within the areas evaluated, the audit team identified one deficiency. This deficiency does not appear to impact the quality and technical adequacy of the SFIPD products being supplied to BSC. The deficiency had two examples. In one example, SFIPD closed a nonconformance where the disposition was to use rejected material as use-as-is without convening a Material

Review Board (MRB), as required by Section 8 of SFIPD's QAM. In another instance, SFIPD closed a nonconformance where the disposition was to repair the rejected material; this was also closed without convening an MRB. During the previous survey, BSC identified a similar instance in which the disposition in a nonconformance was use-as-is, and SFPID closed it without convening an MRB. The observers determined that BSC Audit No. BSC-SA-02-009 was well-planned and effectively executed. The audit team members were independent of the activities they audited and were knowledgeable regarding the QA and technical disciplines within the scope of the audit. The audit team concluded that the QARD and QAM had been satisfactorily implemented in the areas evaluated. The observers agreed with the audit team's conclusions, findings, and recommendations presented at the audit exit. The staff will continue to interface with OCRWM and follow the progress that SFIPD is making to address the issues identified during this audit.

3.0 AUDIT PARTICIPANTS

3.1 Observers

Kamalakar R. Naidu	Team Leader	NRC
Bruce Mabrito	QA Observer	Center for Nuclear Waste Regulatory Analyses

3.2 BSC Audit Team

Robert F. Harstern	Audit Team Leader
Daniel A. Klimas	Audit Team Member

3.3 Bechtel SAIC, LLC, Yucca Mountain Project

Jerry Cougar	Manager, Engineering and Fabrication
Roxie VanDillen	Quality Compliance

3.4 SFIPD

Terry J. O'Connor	QA Director
Steve Andrews	Project Coordinator
Larry Verner	Senior Engineer, Nuclear
Gene Woefel	Quality Control Manager
Steve Woolery	Chief Inspector, Quality Control

3.5 Contract Inspection Services

Curtis Wendler	Authorized Inspector

4.0 REVIEW OF THE AUDIT AND AUDITED ORGANIZATION

The BSC audit of SFIPD was conducted in accordance with OCRWM Procedures AP 18.2Q, "Internal Audit Program," and AP 16.1Q, "Management of Conditions Adverse to Quality." The NRC staff's observation was based on NRC Manual Chapter 2410, "Conduct of Observation Audits," dated July 12, 2000.

4.1 Audit Scope

The scope of the audit was to evaluate how effective the SFIPD QAP was in specific areas (as delineated in the BSC Technical Services Statement of Work, Revision 1, dated October 22, 2001) regarding implementation of BSC's recommendations in those six elements of the SFIPD QAP wherein BSC had identified concerns during the previous survey - BSC-SFE-01-08. These elements included; 1) Control of Purchased Items and Services; 2) Control of Special Processes; 3) Test Control; 4) Control of Measuring and Test Equipment; 5)Corrective Action; and 6) QA records. The audit also examined other areas related to the fabrication of the welded rings, and associated operating procedures.

4.2 Audit Conduct and Timing

The audit was performed effectively and the audit team demonstrated a sound knowledge of the applicable SFIPD program and procedures. BSC developed an audit checklist using the "Technical Services Statement of Work for Waste Package Weld Flaw Analysis," Revision 1, the QARD, and the SFIPD QAM. The audit team members conducted thorough interviews; they challenged responses when appropriate; and they effectively employed their audit checklist. The observers concluded that the timing of the audit was appropriate because the audit team was able to observe one welded ring sample that SFIPD had completed. The audit team and the observers caucused at the end of each day. Meetings between the audit team and SFIPD management, with the observers present, were held each morning, to discuss the current audit status and preliminary findings.

4.3 Audit Team Qualification and Independence

The qualifications of the audit team were verified during previous reviews, and determined to be in accordance with the requirements of DOE Procedure AP 18.1Q, "Auditor Qualification." The observers concluded that the audit team members had the necessary expertise to perform the audit and were qualified to audit the SFIPD. The observers also concluded that the audit team members had sufficient authority and organizational freedom to make the audit process meaningful and effective.

4.4 Examination of QA and Administrative Requirements

The observation team determined that audit activities were appropriately conducted in accordance with the OCRWM QA Audit Plan for Audit No. BSC-SA-02-009. The auditors reviewed selected project documents identified in the audit plan and employed a detailed checklist as the basis for their reviews. The audit team also examined related project technical documentation to verify the accuracy of source material and the status of data qualification activities. The auditors conducted interviews with personnel with appropriate levels of knowledge who were directly responsible for the development of the travelers for the welded rings, and for associated quality requirements. During the conduct of the these interviews, the auditors effectively used the audit checklist to focus the inquiries on areas of technical concern. The audit team also gave the NRC observers adequate opportunities to provide comments, and to seek clarification on technical issues.

The NRC observers determined that the programmatic elements of DOE QA Procedure (QAP) 18.2Q, Revision 0, "Internal audit Program," were appropriately implemented by the audit team. Specifically, the well-developed planning and implementation aspects of this audit were demonstrated during the conduct of the audit entrance meeting; coordination and communication between team members; the development of preliminary audit findings; and the clear articulation of these findings.

4.5 Examination of the QA Elements

Before begining the audit, SFIPD officials accompanied the audit team and observers on a tour of their facilities. The NRC staff observed the audit team conducting detailed checks of the technical adequacy of the SFIPD activities related to the fabrication of the welded rings. The audit team used a combination of technical-issue probing and procedural-compliance checks and verifications to thoroughly consider the technical adequacy of the weld procedures, NDE, and information contained in the SFIPD travelers.

4.5.1 Procurement Control

The auditors reviewed SFIPD purchase orders (POs) to key vendors for the fabrication of the welded rings, to determine if appropriate QA requirements contained in the "Technical Services Statement of Work for Waste Package Weld Flaw Analysis" were incorporated in them, and if the QA requirements of the SFIPD were followed in the preparation. The QA Director's signature on the POs indicated his review and approval. The auditors reviewed other POs to determine if SFIPD used only those vendors listed on its Approved Vendors List (AVL). The auditors selected a few vendors and verified if SFIPD followed its QAP requirements to qualify them to be placed on the AVL, and if there was adequate documentation to support placement of those vendors on the AVL. The auditors did not identify any adverse findings in this area.

The observers agreed with the audit team findings in this area.

4.5.2 Identification and Control of Items and Materials

When SFIPD receives a shipment of procured items, its receipt inspectors inspect the shipment for shipping damage, complete a receipt inspection form, and identify the material with a unique alpha numerical number that is used to trace the material. In answer to an auditor's query, SFIPD replied that, in instances when a piece of material is cut off, then the unique number is transcribed to the cut piece. During the tour of the SFIPD facilities, the audit team observed that all components in the shop were identified with a unique alpha numerical number. The auditors verified that the identification numbers on the welded rings and those documented in the travelers were identical.

SPID prepared "Job Travelers," in which it documents the sequence of the various manufacturing steps. The job travelers identified mandatory hold points for in-process inspections and NDE, in-process, as well as final, inspections; and referenced relevant drawings, and weld procedure specifications, as necessary. The auditors verified that all the steps in the traveler, specifically in-process inspections, for the welded rings, were followed sequentially, as indicated by the sign-off dates.

The observers agreed with the audit team findings in this area.

4.5.3 Control of Measuring and Test Equipment (MT&E))

The auditors reviewed the actions SFIPD took to implement the BSC recommendation, regarding calibration, during the last survey. Specifically, BSC identified that, contrary to Section 9A of the SFIPD QAM, the stickers on the heat-treatment-furnace strip chart recorder (strip chart recorder) indicated that they were being calibrated annually, instead of quarterly. The SFIPD QAM was revised to require the calibration of the strip chart recorder annually. SFIPD had revised the "M&TE Equipment Assigned Frequencies List" earlier, requiring the strip chart recorders to be calibrated annually. During this inspection, the auditors verified the validity of calibration stickers on several SFIPD measuring items used for products supplied to BSC. During this activity, the auditors observed that there was no valid calibration sticker on the strip chart recorders, but instead a maintenance sticker from an Energy Services Group, Incorporated (ESG). Honeywell, Incorporated (Honeywell) performs the calibration on the strip chart recorders. After reviewing the maintenance records performed on the recorder, SFIPD personnel were able to prove that ESG pasted its maintenance sticker over Honeywell's sticker, and obscured it. The auditors were satisfied and identified no adverse findings in this area.

The observers agreed with the audit team findings in this area.

4.5.4 Nonconformance Control

The audit team reviewed selective nonconformance reports (NCRs) to determine if they were closed in accordance with Section 8 of the SFIPD. During the conduct of a Supplier Survey, the results of which are documented in the Supplier Survey Report BSC-01-008, BSC had an adverse observation. However, because BSC made the observation during a Supplier Survey, BSC identified the observation as a recommendation instead of a deficiency. BSC observed that the disposition in NCR N-01-012 was for the nonconforming material to be used "use-as-is." Section 8 of the SFIPD QAM requires that whenever nonconforming material is to be used "use-as-is," an MRB has to be convened to review and concur with the disposition. Contrary to this requirement, NCR N-01-012 was closed without convening an MRB. SFIPD implemented BSC's recommendation by evaluating all the previous NCRs that required MRB review and closed the action on the adverse finding. During the current audit, BSC observed that in NCR N-01-023, even though the rejected material was recommended to be used "use-as-is," SFIPD closed the NCR without technical justification and without convening an MRB. BSC also identified that in NCR N-01-028, even though the disposition was to repair the rejected material, SFIPD closed it without convening an MRB. BSC identified that the closure of the two NCRs was a deficiency, and contrary to Section 8 of the SFIPD QAM. BSC combined the improper closure of two NCRs and identified it as one deficiency.

The observers agreed with the audit team findings in this area.

4.5.5 Supplier Deviation Disposition Requests

BSC, in Section XV, "Acceptance Method," of its "Technical Services Statement of Work for Waste Package Weld Flaw Analysis" states, the supplier shall notify the purchaser (BSC) when the supplier identifies any nonconformances (deviation) from the procurement document. This notification shall be performed using Appendix 4, "BSC Supplier Deviation Disposition Request" (SDDR). NCRs where the proposed disposition is repair, or use-as-is, are required to be submitted to the purchaser for review and concurrence." NCR N-02-008, dated January 29, 2002, pertained to the fabrication of welded rings, and indicates that SFIPD did not heat-treat test-specimen welded cylinders in compliance with "Heat Treatment Instruction Sheet," Procedure H87130N390HT2, Revision 2. Specifically, the procedure required a minimum of three Thermocouples (TCs) to be attached to the cylinder in pairs; each pair was to be placed no closer than 6-inches (in.) and no farther than 12-in. apart, with each pair located at the center of the cylinder 180 degrees apart in rotation from the other. During the heat-treatment-furnace run, two TCs remained intact and the other two slipped away. This resulted in two TCs measuring the actual material temperature that is reflected in the chart. The cause for the TCs slipping away was identified to be insufficient backup restraining devices to keep the TCs in place. Corrective action recommended to preclude repetition was to install necessary restraining devices to obtain continuous temperature reading. The disposition of the NCR was "use-as-is." SFIPD initiated an SDDR and sent it to BSC for review and approval. The audit team had no adverse findings in this area.

The observers agreed with the audit team findings in this area.

4.5.6 Personnel Training Records

SFIPD gives training to its employees, and documents such activity in Personnel Training Records (PTRs). A PTR dated January 11, 2002, pertained to the Yucca Mountain Project job Procedure H87130-WFR-1, Revision 0, dated January 9, 2002, and contained the signatures of the participants, outlined the topics discussed during the training, and identified the numerous SFIPD documents pertaining to the subject. A PTR dated January 24, 2002, indicated that SFIPD personnel were trained in the revision to Procedure H87130-WFR-1, Revision 1, dated January 24, 2002, "Procedure for Documenting the Location and Orientation of Flaws." This procedure establishes the method of recording the location and orientation of flaws identified by radiographic, liquid penetrant , ultrasonic, or eddy-current NDE for the waste package weld-flaw analysis project. SFIPD had revised Procedure H87130-WFR-1, Revision 0, dated January 9, 2002, incorporating the comments received from BSC. All participants signed the PTR. The audit team had no adverse findings in this area.

The observers agreed with the audit team findings in this area.

5.0 NRC STAFF FINDINGS

The observers determined that Audit No. BSC-SA-02-009 was effective in determining the level of compliance of SFIPD activities associated with sample fabrication. The observers agreed with the audit team's conclusion that the purchase orders, QARD, and SFIPD QAP had been satisfactorily implemented, except for the identified potential deficiency.

5.1 NRC Audit Exit Summary

The audit team discussed the inspection elements reviewed during the audit exit meeting. Of particular interest was the fact that there was only one deficiency identified with the controls established for the disposition of nonconformances. The observers expressed appreciation for the excellent cooperation and responsiveness provided to them during their observation activities. In addition, the observers stated that they agreed with the audit team's findings and recommendations, as presented at the audit exit. The observers also stated that they will continue to interface with DOE and BSC and follow the progress that SFIPD is making to correct the deficiency identified during this audit.

5.2 NRC Audit Observer Inquiries

There were no Audit Observer Inquiries written during this audit.